Title: Animal Crackers on Parade

Brief Overview:

In this unit the students will use animal crackers in a variety of activities. They will use patterning, measuring, sorting, equivalent fractions, graphing, and probability. Teachers may select part or all of this activity which may take five activity times.

Link to Standards:

- **Problem Solving** Students will demonstrate their ability to solve mathematical problems through the use of formulating problems from everyday and mathematical situations. They will use problem-solving approaches to investigate and understand mathematical content.
- **Communication** Students will reflect on and clarify their thinking about mathematical ideas and situations. Students will relate their everyday language to mathematical language and symbols.
- **Reasoning** Students will use patterns and relationships to analyze mathematical situations.
- **Connections** Students will relate various representations of concepts or procedures to one another, recognize relationships among different topics in mathematics, and use mathematics in other curriculum areas and in their daily lives.
- **Estimation** Students will explore estimation strategies. Students will determine the reasonableness of results.
- **Number Sense** Students will construct number meanings through real-world experiences and the use of physical materials.
- **Number Relationships** Students will represent and describe mathematical relationships.
- **Measurement** Students will develop the process of measuring and concepts related to units of measurement. Students will make and use estimates of measurements.
- **Statistics** Students will collect, organize, and describe data.
- **Fractions** Students will demonstrate understanding of equivalent fractions.

Grade/Level:

Grade 1-3

Duration/Length:

This activity will take three to five days. The time may vary due to student ability levels and the extensions used.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Constructing fractions
- Students should have knowledge of fractional parts and be able to read fractions such as one-half, one-third, one-fourth, two-fifths, etc.

Objectives:

Students will:

- work cooperatively in group to solve problems.
- collect, organize, and interpret data from resources.
- represent and use numbers in a variety of equivalent forms.
- construct a bar graph.
- categorize animal crackers to create graphs and patterns.
- use standard measurements.
- investigate to find equivalent fractions.
- construct glyphs to demonstrate knowledge of equivalent fractions.

Materials/Resources/Printed Materials:

- Animal Crackers--large quantity
- Pencils
- Containers to hold twelve or more animal crackers (suggest 1 cup or margarine tub per group)
- Centimeter and inch rulers
- Small size pad of sticky paper for graphing (Post-it notes)
- Two different colored counters as a substitute for animal crackers
- Blank sheets of paper for each student.
- Copy of clown glyph for each student.

Development/Procedures:

Activity 1: Estimating, graphing, sorting, and classifying

Materials:

Animal Crackers
Containers for animal crackers
Math Journals

- The teacher explains to the students that over the next few days they will be sorting, organizing, categorizing, measuring, constructing glyphs, and working with equivalent fractions by using various animal crackers.
- The teacher will distribute containers of animal crackers. A minimum of 12 crackers per group of three students. Instruct the students not to touch or eat the animal crackers.
- In small groups the students will estimate the number of animal crackers in the container. Ask the different groups of students to explain how they arrived at their estimate. The teacher may graph the estimates from Activity 1 using the categories 0-5,5-10,10-15. Give each group a sticky note to record their estimate to stick to the board under the proper heading.
- The teacher instructs the students to count the animal crackers and compare the actual number to the estimated number. Group data in categories of estimated accuracy: higher than actual number, lower than actual number and correct estimate.
- The class will need to identify and discuss the animals that will be used during this process. Each group will make a real graph of animal crackers showing the contents of their cup. This graph may be transferred to a paper graph.

Sorting:

- The students will divide the animal crackers into two categories and name their attributes. Repeat the process using different attributes.
- Allow time for the students to write or draw in their Math Journals explaining how they decided on the attributes for each group.

Activity 2: Patterns and Measurement

Materials:

Twelve animal crackers per child
Container for animal crackers(Substitution is allowed by using colored counters for animal crackers)

Patterns:

- Review patterns briefly with students.
- Students will make several patterns using animal crackers such as ABAB, AAB, AABB, ABC, and etc.
- Students pair off and make a secret example of two patterns per pair. Exchange secret patterns with a pair of neighbors. Figure out the secret pattern exchanged with neighbors.

Measurement:

- Have each child line up any four of his/her animals for a parade. Discuss the likelihood of everyone having the same length of train. Each train will be unique.
- Have the children measure the length of their trains first in inches, recording their answers. Discuss in small groups why (or why not) their measurements differed from others in the group?
- Repeat procedures with centimeter rulers.
- With the last train activity have children predict if the measurement will be the same for the same number of animals piled on top of each other. Children should record measurements of length of train and height of pile in Math Journals and explain if and why the measurements differ.

Activity 3: Fractions

- Students will discover fractions that are equal to ½.
- Distribute plain piece of paper. Review fraction by folding paper. First to form 2 halves. Color in one half. Then fold the paper again. Recognize and name 1/4. Ask children how many fourths are in ½. Record on chart or chalkboard that ½=2/4. Fold the paper again. Recognize and name 1/8. How many eighths are in ½? Record ½=4/8. You may also want to review parts of a whole set using children, e.g. six children- ½ girls and 3/6 girls or ½ boys and 3/6 boys; 10 children ½ wearing shorts and ½ wearing long pants or 5/10 in shorts, 5/10 in long pants. Continue this activity as needed. Be sure to record as you proceed.
- Find sets equivalent to ½.
  Children may work individually or in small groups. They will need 2 circus train cars (½ sheet of paper with wheels and bars drawn on will suffice) and up to twenty counters (imaginary circus animals) per child.
  Begin with set of 2 animals. Have children place set evenly in the two cars. Record that a set of 2 evenly divide into two cars is ½. Then use a set of three. Have the children discover that they cannot be evenly divided. Move on to a set of four. Will we be able to evenly divide into two cars? Have children place the four counters evenly in the two cars. Record that 2/4=1/2 of set. Continue with numerals through ten or up to twenty depending on comfort level of the children. (You may want to have the children recognize even numbers when observing the collected data.)
- Construct a glyph using equivalent fractions.

Evaluation:

Students may be evaluated based on the following:

- Group participation
- Journal responses
- Glyph with scoring rubric

Extension/Follow Up:

1. Give each student a blank sheet of paper. Allow them to illustrate five different examples of fractions equivalent to ½. Show an example of six balloons with three of the balloons colored red to represent 3/6. After completion of the project have at least four students verbally describe their drawings and correctly read the fractions to the class while visually showing their work to the class.

2. Use geoboards to investigate many different ways to make ½ equivalents. Give each student 2 geobands to demonstrate their interpretation of ½. Allow students to share their findings with the class or small group. Depending on capability of class the findings may be transferred to geoboard paper.

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Directions For Completing Clown Glyph

We will be working with ½.

½ = ❑/6 Make ❑ balloons in clown's raised hand.

½ = ❑/16 Make ❑ triangles on the clowns shirt.

½ = ❑/10 Make ❑ buttons on the jacket.

½ = ❑/12 Make ❑ patches on the pants.

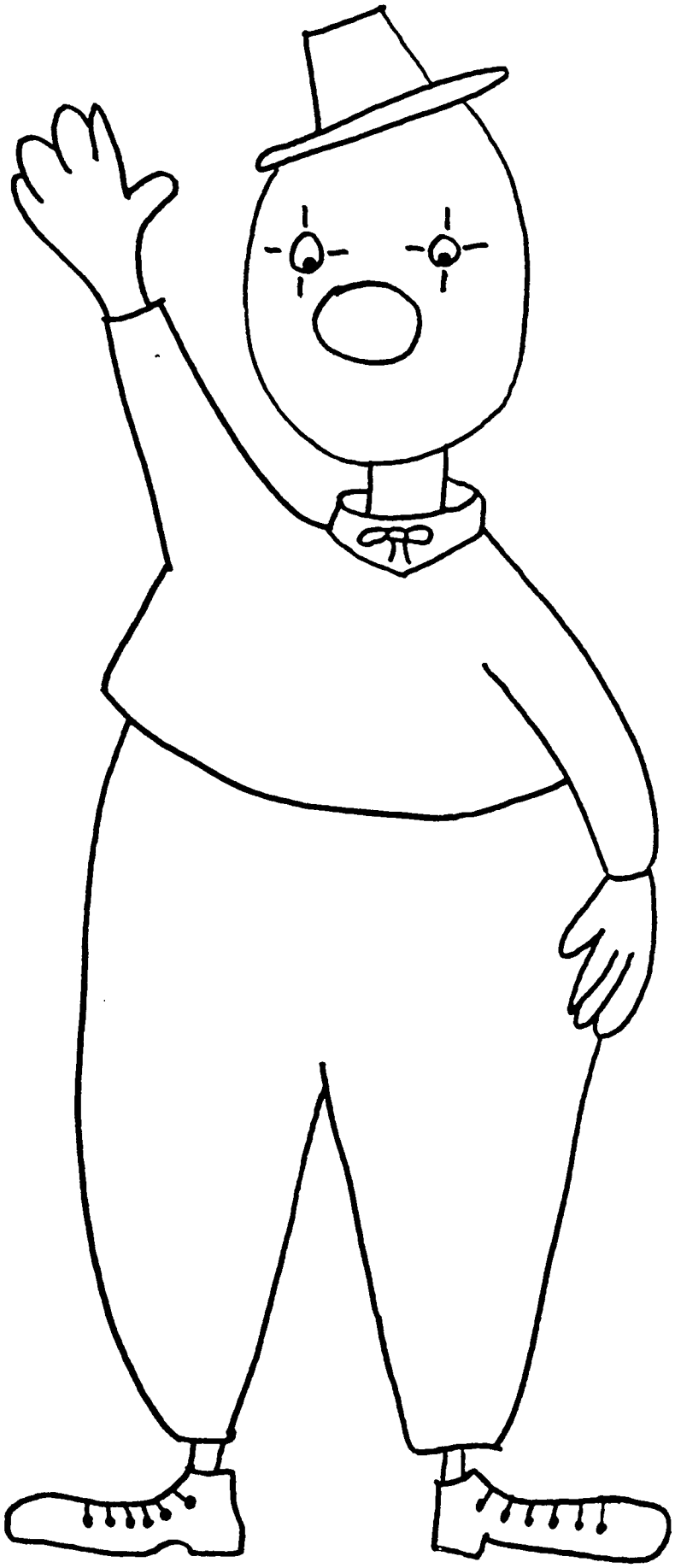
½ = ❑/8 Make ❑ flowers on the hat.

½ = ❑/20 Make ❑ strands of hair on the clown.

½ = ❑/4 Make ❑ pom poms on the clown's shoes.

Make a smile on the clown face if you like fractions.

Make a frown on the clown face if you do not like fractions.



Glyph Construction Rubric

3 points

- All data is accurate.
- Correct symbols are used.
- Glyph is neat and easily read.

2 points

- No more than 1 piece of inaccurate data was collected and/or recorded.
- No more than 1 incorrect symbol was used.
- Glyph is readable.

1 point

- Two or more pieces of inaccurate data were collected and/or recorded.
- Two or more incorrect symbols were used.
- Glyph is difficult to read.

0 points

- No attempt made.
- Glyph unreadable.